

Amendments to the Specification

Please replace the paragraph beginning at page 26, line 24, with the following amended paragraph:

The electrolysis apparatus, which is one of the ionics instruments, has been devised in order to avoid mixing of a raw material and a reaction product with each other during reaction. For example, a soda production using a conventional mercury process employs a method in which a mercury layer is provided so as to convert an ion into a metal compound, instead of moving the ion directly. Specifically, sodium and chlorine obtained by electrolysis are separated so as not to form sodium ~~chlorinechloride~~, for thereby obtaining the chlorine. However, this mercury process is problematic in environmental pollution and product contamination due to mercury. Therefore, a diaphragm process utilizing various types of diaphragms has been used instead of the mercury process. Initially, an inorganic fiber such as asbestos, which had been formed into a plate-like shape, was used as a diaphragm so that an aqueous solution filled in voids inside the diaphragm allowed ions to move. However, although this diaphragm process is useful in a case where a reaction product produced at one of the electrodes is a gas and can be easily separated from other materials, the diaphragm process lacks in the capability of preventing mixture of the materials and reverse reaction, and hence productivity is greatly retarded. Then, an ion exchange membrane has been developed, and nowadays the ion exchange membrane has become a mainstream diaphragm which can be used under the ordinary temperature.

Please replace the paragraph beginning at page 6, line 7, with the following amended paragraph:

However, when such a surface propagation phenomena of the ion is utilized to produce an ionic conductor and is applied to various types of ionics elements, the following problem arisearises: Since the propagation of the ion is performed by utilizing only the surface of the solid, an absolute amount of the ions for movement is insufficient and thus the application to a diaphragm or the like is difficult. The present inventor has succeeded in producing a practically usable ionic conductor by combining the surface propagation phenomena of the ion with a porous body having a large surface area. Particularly, the present inventor has conducted a study of a ceramic-based porous material so as to use as the porous body and utilize surfaces of a number of pores formed therein, and then found an ionic conductor having a large ionic conductivity and a solid appearance.

Please replace the paragraph beginning at page 7, line 6, with the following amended paragraph:

In a preferred aspect of the present invention, the porous body comprises a porous ~~ceramic~~ceramic.

Please replace the paragraph beginning at page 7, line 8, with the following amended paragraph:

The ionic conductor according to the present invention may comprise an organic porous body. However, in consideration of a mechanical strength and a chemical stability, it is preferable to use ~~the~~ porous ceramics as the porous body.

Please replace the paragraph beginning at page 7, line 13, with the following amended paragraph:

In a preferred aspect of the present invention, the porous ~~ceramies~~-ceramic comprises a porous glass, a porous alumina, or a porous mullite.

Please replace the paragraph beginning at page 8, line 24, with the following amended paragraph:

According to another aspect of the present invention, there is ~~provide~~provided a method of producing an ionic conductor, the method comprising: preparing a porous body which has a plurality of continuous pores passing through the porous body; and attaching ionizable functional groups to active groups being present on surfaces of the continuous pores by a covalent bond or a hydrogen bond.

Please replace the paragraph beginning at page 9, line 3, with the following amended paragraph:

According to another aspect of the present invention, there is ~~provide~~provided a method of producing an ionic conductor, the method comprising: preparing a porous body which has a plurality of continuous pores passing through the porous body; bonding hydrophobic groups to active groups being present on surfaces of the continuous pores; and attaching one of anionic surface active agents, cationic surface active agents, and amphoteric surface active agents, each of which has ionizable functional groups and one of alkyl groups and fluorocarbon functional groups, to the hydrophobic groups.

Please replace the paragraph beginning at page 9, line 14, with the following amended paragraph:

According to another aspect of the present invention, there is ~~provide~~provided an ionic conductive diaphragm comprising an ionic conductor, characterized in that: the ionic conductor comprises a porous body which has a plurality of continuous pores passing through the porous body, and ionizable functional groups attached to surfaces of the continuous pores.

Please replace the paragraph beginning at page 9, line 21, with the following amended paragraph:

According to another aspect of the present invention, there is ~~provide~~provided an ionics element comprising an ionic conductor, characterized in that: the ionic conductor comprises a porous body which has a plurality of continuous pores passing through the porous body, and ionizable functional groups attached to surfaces of the continuous pores.

Please replace the paragraph beginning at page 10, line 1, with the following amended paragraph:

According to another aspect of the present invention, there is ~~provide~~provided an ionics instrument having an ionic conductor, characterized in that: the ionic conductor comprises a porous body which has a plurality of continuous pores passing through the porous body, and ionizable functional groups attached to surfaces of the continuous pores.